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“But Officer, it wasn’t my fault . . . the car did it!”

CRIMINAL LIABILITY ISSUES CREATED BY AUTONOMOUS VEHICLES

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INTRODUCTION

The safety, efficiency, and mobility benefits of autonomous vehicles are extensive and many believe that

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these technologies will be widely adopted in the near future.¹ Acceptance of autonomous vehicles by society could translate into real-life improvements by reducing the fear of car crashes, increasing productivity by relieving congestion for busy commuters, and providing continued mobility for elderly persons who would otherwise be apprehensive about their ability to drive safely.

In addition to providing new solutions to the above issues, autonomous vehicles could solve problems for which there currently are not adequate remedies, such as: eliminating the need for drivers licenses, thus allowing thirteen-year-olds to meet at the mall to watch a movie; providing a safe, low-cost alternative to ending a night out partying by providing a “Take me home, I’m drunk” button; making speeding tickets become a thing of the past; and ending the threat of distracted driving before it becomes an epidemic.

While the benefits are numerous, there are important questions that must be addressed before any can be realized. Primary among these is the issue that our current legal system assumes that the person in the driver’s seat is in control of the vehicle, which is not necessarily the case with autonomous vehicles.² If drivers’ roles are reduced with the creation of a limited-driver or no-driver input system, the criminal liability regime will have to significantly change in order to accommodate the new technology. While some traffic violations and vehicular crimes are based on strict liability, others have intent requirements, and/or depend on a person being “in control” of a motor vehicle. The required change may be as straightforward as creating a new set of laws regulating the actions of autonomous vehicles, as well as their owners and drivers, in addition to laws that already exist. The difficulty, however, is in developing those laws in a manner that fully reaps the benefits of removing human error from the roads, while still achieving the criminal law purposes of deterring and punishing misbehavior. The policy implications presented could require tailoring of laws to many problem areas, which in turn can create undesired

1. Sven A. Beiker, *Legal Aspects of Autonomous Driving*, 52 SANTA CLARA L. REV. 1145, 1149–52 (2012).

2. *Id.* at 1152.

opportunities for confusion and misunderstanding for those trying to pass the laws.

The first group of offenses to consider is strict liability offenses: speeding infractions, driving without proof of insurance, and even parking tickets are determined by a fairly clear “either you did it or you didn’t” standard. The second group is intent offenses. These include any vehicular crime that has a *mens rea* requirement—most notably, criminal vehicular homicide, which often is based in negligence.³ The third group is comprised of offenses that depend on a person having control of a vehicle. These offenses will cause the most problems for developers of autonomous vehicles because it may be unclear as to who has “control” of an autonomous vehicle. Issues such as implied consent, (e.g., a person who operates a vehicle on a public road is deemed to have consented to an alcohol test if suspected of drunk driving), fall into this classification.⁴ The final group of offenses to consider is those where the owners of vehicles are vicariously liable for the actions of the drivers. In Minnesota, for example, the owner of a vehicle can be charged with a misdemeanor if their car passes a school bus that has a stop sign extended and lights flashing.⁵ Also, jurisdictions that allow automated enforcement of speeding and red-light-running often send the ticket to the owner of the car without a picture of who was driving.⁶ In addition to the above groups of offenses, deployment of autonomous vehicles will also raise a number of potential “new” crimes, such as third party tampering (hacking) and terrorism, that need to be addressed.

3. MINN. STAT. § 609.21 (2011). The Minnesota Statute on Criminal Vehicular Homicide and Injury includes applications based on strict liability (operating a motor vehicle while having an alcohol concentration of 0.08 or more) and intent (operating a motor vehicle in a grossly negligent manner). *Id.*

4. See e.g., CAL. VEH. CODE § 23612 (2012) (state’s implied consent statute). Many states have implied consent laws with respect to suspected drunk driving. For a discussion, see *Tests for Alcohol or Drugs, Generally; Implied Consent*, 7A AM. JUR. 2D AUTOMOBILES AND HIGHWAY TRAFFIC § 346 (2012).

5. MINN. STAT. § 169.444(6) (2011).

6. See, e.g., 625 ILCS 5/11-208.8 (2011) (Automated traffic law enforcement system); ALBUQUERQUE, N.M. ORDINANCES ch. 7, art. XI, § 7-11-5(B) (2005) (as amended 2009).

I. PASSENGER V. AUTO-PILOT

The major problem with autonomous vehicles is that it is unclear who, if anyone, is actually involved with the “driving.” If no one is driving the vehicle, who should bear ultimate responsibility if something goes wrong? Is the “driver” of an autonomous vehicle like the engineer of a train or pilot of an aircraft on “autopilot,” or is she simply a passenger, with little or no control of the vehicle’s behavior? To solve this problem, traffic laws should distinguish between “operating” a vehicle and “operating a vehicle in a meaningful way.”

A. *Passenger: The Driverless Car*

In the passenger scenario, the autonomous vehicle is so skilled at driving that it functions as a driverless car—with or without passengers. For example, an operator of a vehicle could program the autonomous vehicle and sit in the driver’s seat eating a hamburger and fries—even sleeping—oblivious to the functioning of the car. Or, commuters could arrive at work in the morning, then tell their cars to go park with instructions to come back after work to pick them up. While the car is given instructions by a human, it is not being driven in the traditional sense; the “driver” is not operating the vehicle in a meaningful way.⁷

In this scenario, laws to address common issues, such as speeding and stopping for stop signs, are fairly simple: program autonomous vehicles to comply with all statutes and regulations regarding the rules of the road.⁸ If a car were truly in passenger mode any violation would be a malfunction on the part of the vehicle. This would also be true in cases where intent is the basis of a vehicular crime—as long as the operator was merely acting as a passenger, negligence could not be found in the traditional sense.⁹

7. See *infra* Part I.B.

8. The autonomous technology in the vehicle “is capable of being operated in compliance with the applicable traffic laws of this State NEV. ADMIN. CODE ch. 482A, § 16(2)(f) (effective Mar. 1, 2012). Because Nevada is the only U.S. jurisdiction in which autonomous vehicles are authorized, the Nevada Department of Motor Vehicles’ regulations are the only insight we have to the legislative process of addressing autonomous vehicles. See *infra* Part I.E–G.

9. This does, however, raise the issue of hacking into the autonomous vehicle’s computer.

If the technology is available, and every state chooses the passenger route, a clear line could be drawn between driving and being driven. Nevada's draft regulations have included language that requires a safety alert to the driver during an autonomous technology failure.¹⁰ If the driver is not present or is unable to safely take control of the vehicle, the vehicle must safely cause itself to come to a stop.¹¹ Legislators can account for all aspects of an operator who is not operating in a meaningful way. Accidents that result in property damage or personal harm currently can have both criminal and civil implications for the driver at fault; victims of accidents caused by the malfunction of an autonomous vehicle could find recourse in civil liability against the manufacturer.

B. Auto-Pilot: I Have an Override Button, and I'm Prepared to Use It!

Upon leaving the driverless car realm, one enters the murky waters of auto-pilot. The pressing question is regarding the responsibility of a driver¹² vis-a-vis the disengage option.¹³ On one hand, the disengage option could serve as a safety feature where the operator is able to take control of a malfunctioning car. Here, the issue is whether the operator has a duty to continually monitor the behavior of the car, being ready to take over at any moment, or if the operator is only obligated to respond to safety alerts generated by the vehicle. In both cases, criminal sanctions could arise if a person either fails to override when obligated to, or acts to override in an inappropriate manner.¹⁴ On the other hand, the law will also need to anticipate moving violations where the driver overrides properly functioning autonomous technologies so that they may drive the vehicle as a standard motor vehicle. While existing laws against

10. NEV. ADMIN. CODE § 16(2)(b).

11. *Id.* § 16(2)(d)(2).

12. Not merely an operator because human interaction will be required.

13. In the passenger scenario above, the ability to disengage could be justified merely as a psychological help for people who don't like the idea of a robotic car careening out of control. It could also exist as a political pacifier for those who are not quite ready to give up the freedom of the open road.

14. While the former scenario eliminates some of potential benefits provided by autonomous vehicles, such as texting or sleeping while the vehicle is in motion, the latter situation allows the driver to engage in other activities until alerted to the need to act.

moving violations should be sufficient to provide legal sanction, developers of the technology will need to address how to provide a “time stamp” to verify whether a person was operating a vehicle in a meaningful way, or whether the car was operating autonomously. This will be necessary for prosecutors who would be required to prove that the driver was operating the vehicle in a meaningful way and beneficial for vehicle users who wish to present the lack of override as an affirmative defense.

II. NEW BENEFITS, NEW REGULATIONS

The choice between basing laws on passenger or auto-pilot modes will ultimately be a legislative question for each state. Regardless of the path chosen, legislators will be faced with the daunting challenge of creating a new set of regulations that will satisfy the public need for safety while simultaneously realizing the potential benefits of autonomous vehicle technology.

The first problem state legislatures will face is the use of the word “operate,” which will either need to be redefined or at the very least, distinguished. This varies significantly from traditional laws that consider the operator of a motor vehicle to be actively controlling the vehicle. To ban texting while riding in an autonomous vehicle seems pretty foolish if a person was permitted to sleep while in the driver’s seat. While Nevada did not completely redefine “operate” for autonomous vehicles, they did amend the texting ban to make an exception, saying in part, “a person shall be deemed not to be operating a motor vehicle if the motor vehicle is driven autonomously.”¹⁵

The next issue, discussed briefly above, is that of the responsibility associated with a disengage button. In the passenger scenario, a disengage button, if even available at all, would function primarily as a psychological comfort for drivers not yet accustomed to a car driving itself since the car would be expected to handle a malfunction without a driver.¹⁶ In the auto-pilot scenario, however, there is a spectrum of override responsibility that could be placed upon the driver. The law would need to address hand-over scenarios, from a

15. S.B. No. 140, 2011 Leg., 76th Sess. amend. 99 (Nev. 2011).

16. NEV. ADMIN. CODE § 16(2)(d)(2).

safety alert that prompts a human to take control to an affirmative duty to prevent any violation. These issues have not yet been explored, but present many opportunities for grey areas as proponents of the technology see autonomous vehicle capabilities as nearly perfect, even if not fail-safe, and those fearful of it desire to have a driver with ultimate authority. If legislators determine they will require a licensed driver in the driver's seat,¹⁷ they must then decide whether to place criminal responsibility on that driver for failing to respond to technological malfunctions.

A. Autonomous Vehicles and Drunk Driving

The complexity of the issue regarding the responsibility of and ability to use an over-ride button, becomes most clear in the context of "drivers" who have had too much to drink. The possibility of removing drunk drivers from the road is one of the most prominent benefits autonomous vehicles might provide. The law may not go so far as to allow someone in the driver's seat of a car to consume alcohol while driving, but could a provision be made for inebriated people to be driven home by their own car? One way to do this, potentially, would be to have an "I'm drunk, take me home" button, where the car acts as a personal "taxi," delivering the intoxicated person home safely without any further interaction. However, the car would have to operate in autonomous mode without an override option. As long as an override option is available, an inebriated person could be found to be in control of the car, since courts have interpreted "control" of the vehicle to mean much more than just driving it. In the extreme case, it can mean a car pulled over on the side of the road with the driver, having an alcohol concentration above the legal limit, taking a nap in the passenger seat with the keys in their pocket.¹⁸ Because of this reasoning, legislators will likely have to carve out an exemption for autonomous vehicles that can disengage their "over-ride" button when their "driver" is intoxicated. Another method of triggering this disengage option would be the inclusion of in-car breathalyzers. While such tools currently are used to

17. Nevada requires operators of autonomous vehicles to have an additional endorsement on their licenses, as well.

18. See, e.g., *City of Naperville v. Watson*, 677 N.E.2d 955 (Ill. 1997).

disengage ignitions when the person in the driver's seat is intoxicated, they could instead disengage the over-ride button during the trip home.

B. Autonomous Vehicles and New Drivers

Assuming a vehicle could operate safely in passenger mode, the possibility arises that a car could have passengers without having a driver. There are societal norms in place that guide unattended travel for young people. Many children ride the bus to school without aid from their parents, and parents in metropolitan areas often allow their adolescent children to ride the city bus alone. Whether parents will be able to put their elementary-aged children in the car and send them to soccer practice alone is yet to be seen, but should be considered when forming regulations. States will need to consider whether licenses should be mandatory for autonomous vehicles, as well as how to prepare novice drivers. Operating an autonomous vehicle in passenger mode clearly takes less skill than operating a normal vehicle. How will novice drivers be trained if the only time they will interact with cars is during emergencies? Conversely, could autonomous vehicles be trained to recognize a teenager's mistakes and be able to take over? If so, regulators will have to contemplate the specter of an entire generation with "learned incompetence" (i.e., the situation where everyone has gotten used to the car not making mistakes, thus creating the possibility that no one in a malfunctioning vehicle would actually be competent to handle emergency situations).¹⁹

III. AUTONOMOUS VEHICLES AND THIRD PARTY INTERFERENCE

One of the most severe criminal issue to be dealt with goes back to the concept of being accountable for operating the car—a third party hacking into the computer system running the car and thereby controlling it. The thought of a misbehaving computer system is probably scary enough to make some people fearful of autonomous vehicles. The

19. One way to handle this would be to require simulator training and testing for all drivers, but this may be a more expensive proposition than the current regulatory practices.

thought of a stranger—a thief, kidnapper, or murderer—in control of a vehicle is downright terrifying. Stepping back from the worst-case scenario, consider the consequence if the hacker merely wants to cause trouble by making vehicles consistently travel at 10 miles per hour over the speed limit. If the vehicle can self-diagnose that it has been hacked and issue a safety alert, the driver could have the ability to take over the driving task upon receiving the alert. In this scenario, there are at least two liable parties that need to be considered: first, the hacker, who will obviously be criminally liable for her acts, and second, the operator, as she would now be expected to take over safe operation of the vehicle until the technology is fixed.

Furthermore, there are several degrees of culpability. First, the mere act of hacking into the control system of someone else's car can be analogized to stealing a car, and ultimately carjacking, should the car then take off with an unsuspecting passenger. If the car can self-diagnose the problem and shut itself down, as required in the Nevada proposed regulations, the crime likely stops there. However, if the car is unable to self-diagnose, or, if the hacker disabled the diagnostic software to disengage the autonomous technology, then the operator's responsibility to do so becomes the final safety option. This again can be analogized to the carjacking situation where the victim of a carjacking is not necessarily expected to defy the orders of the carjacker. In other words, as mentioned before, if a vehicle operator is expected to override when needed, the ultimate responsibility for safe operation of the vehicle likely will remain with the person with the ability to engage that feature.²⁰

*A. Preventing the Autonomous Vehicle from Committing
"Autonomous" Crimes*

The final issues we will look at involve the ability to use autonomous vehicles to commit crimes. Obviously, this pertains just to the passenger scenario, as it assumes the car is able to operate remotely (i.e., without anyone in it all). The first illegal purpose to consider is drug trafficking. It is easy to imagine a drug ring operation in which unoccupied

20. In this case, culpability would extend to the hacker, although the severity of crimes committed would certainly differ.

autonomous vehicles are used to deliver drugs to an obscure meeting place. The option is attractive as the car would appear no different than any other unoccupied vehicle, but, in the event its cargo is discovered, there is no driver to arrest! While there could be ways to track down the origin of the vehicle²¹ there is a certain level of anonymity created that is not presently available. The prospect of law enforcement officers having the ability to remotely pull over vehicles, and the ability of law enforcement to track movements of any suspected vehicle, autonomous or not,²² will allay some public fears of increased, or at least more efficient, drug trafficking. To dealers, however, the drastic reduction of being physically caught delivering large amounts of drugs would be a welcome buffer.

A far more horrific unoccupied vehicle situation is that of a terrorist attack. While vehicles have previously been used as bombs in the U.S. without causing harm to their operators,²³ the opportunity offered by unmanned vehicles is unprecedented in the way it could allow terrorists to quickly strike targets miles away from their current location. Fortunately, a number of laws and other trends currently exist to counter this dreadful possibility. The first line of defense lays in the laws regulating the sale and distribution of significant amounts of explosive material.²⁴ Tracking this information could provide a basis of reasonable suspicion that would allow law enforcement to search a vehicle before it reaches its target. The second defense would come in the form of the ability of law enforcement to pull over or disable a suspected vehicle along its route. Obviously, this point assumes law enforcement has the power to do this at least when lives are in imminent danger, as discussed below.

21. Many of these methods raise privacy issues, however, further complicating the matter.

22. Despite the opportunity presented by *United States v. Jones*, 132 S. Ct. 945, (2012), the Supreme Court did not address the question of remote vehicle tracking, allowing tracking based on probable cause or warrant to continue.

23. For example, in the 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City, Oklahoma, Timothy McVeigh deployed a rental truck packed with explosives, which detonated after he left the scene. *United States v. McVeigh*, 940 F. Supp. 1541, 1545–46 (D. Colo. 1996)

24. 6 U.S.C. § 1203 (Hazardous Materials Highway Routing); 18 U.S.C. Section 842 (Unlawful Acts)

In both of these cases, however, the greatest deterrence lies in the technology that even allows us to consider the possibility: the ability to program a car to drive somewhere on its own. The instructions inputted into an autonomous vehicle could be the evidence used to implicate the drug trafficker or terrorist. Laws or regulations could be written that require these instructions, and some identifying information of the programmer (perhaps a key code), be retained. Provided that the “black boxes” designed to hold this data are constructed to be sufficiently indestructible, the perpetrator could be easily identified. While this option creates certain risks to privacy of innocent programmers, it is not inconceivable that a system could be devised that accurately identifies the programmer, but transparently shows how the data is deleted.

B. Law Enforcement and Autonomous Vehicles

The final piece of the criminal liability picture is that of law enforcement capabilities. The hacking scenario highlights this point: how much power should law enforcement have to enforce the laws regulating autonomous vehicles? Should the police be able to force a misbehaving vehicle to pull over? Should the information captured by the autonomous vehicle be used in court for prosecutorial purposes? Should owners be held vicariously liable for the actions of their cars?

The worst-case scenario for autonomous vehicles is the situation in which a young child or children is trapped inside a misbehaving car, either due to hacking or malfunction. From a constitutional perspective, giving law enforcement officers the ability to force a vehicle to pull over—potentially a “seizure” under the Fourth Amendment²⁵—is a slippery slope. It would necessarily mean that a dishonest police officer could have wide latitude to remotely pull over a vehicle. From a public safety perspective, it could be argued that by operating an autonomous vehicle a person lessens her reasonable expectation of privacy typically associated with driving a car. This is a particularly strong argument in the passenger scenario or in the case of helpless occupants held hostage by a hacker controlling a vehicle. Certainly, in the passenger

25. U.S. CONST. amend. IV.

setting, there may be no other option for executing a traffic stop, as the operator may not even be in the car, or those that are in the car may not have the ability to tell the car to stop. In the auto-pilot scenario, with the override available, it seems more reasonable to require the operator to respond to a law enforcement vehicle with its lights on. While continuing this line of thought to its extreme conclusion leaves the potential for dangerous high-speed chases, it also limits the power to pull over vehicles without cause. Should law enforcement be given the power to pull cars over remotely, it will need to be regulated, and limited to very specific situations, such as when the officer is certain that lives are in imminent danger.

Vehicles are already equipped with black boxes that record a limited amount of information and are typically only accessed after traffic accidents. Given the amount of data autonomous vehicles will need to process, it is certain that at least some, if not all, of that data will be recorded as well, as discussed above. If this data is available in court, it could be a treasure trove of evidence for litigants. However, the veracity and authenticity of the data will need to be considered. Could the data come in on its own, as if the car is speaking as a person, or will it need an individual to verify its authenticity?²⁶ The questions will only be determined as increasingly detailed data becomes available.

CONCLUSION

As the confidence level in autonomous vehicles rises, so will the potential for misuse. If these vehicles are found to be efficient and safe in passenger mode, it is highly likely that parents will start to feel comfortable sending their children off alone in the car as if it were a personal bus. Before it reaches that point, responsibility needs to be clearly assigned—the roles of occupants, drivers, operators, and

26. While it is different than a drug test, if any analysis needs to be done on the information, it is possible that verification is needed each time data recorder logs are brought into court. *See e.g.*, *Bullcoming v. New Mexico*, 131 S. Ct. 2705, 2709 (2011) (in the criminal law context, the Sixth Amendment's Confrontation Clause requires that when a forensic laboratory report is prepared as evidence for a criminal proceeding, the report may not be introduced at the proceeding unless there is a live witness competent to testify to the truth of the statements made in the report).

owners need to be designated and defined. For generations kids have faked notes from their parents saying they missed school because they were sick. These days, parents allow kids to lie about their age in order to be on Facebook. The near future holds a vehicle that an eight year-old child will probably be able to maneuver better than his or her grandparents. However, if the laws regulating the operation of that vehicle do not evolve with the technology, in the last example, this mischievous child may not only get in trouble with his or her parents if caught, but also end up with a criminal record.

While removing “operating in a meaningful way” will ease many existing criminal implications for drivers, because the car will be smart enough to follow the law, a new version of “operating” is appearing in the form of “engaging the autonomous technology.” Without careful and substantial review, the existing laws regulating legal and illegal use of a vehicle will likely be inadequate. Consequently, as Nevada has, all states will need to contemplate how much responsibility for vehicle operation will remain with the driver, whether the driver, the car’s owner, or the manufacturer will be responsible for handling technological malfunctions, how to handle nefarious third party hackers, and how much power and control this technology should provide to law enforcement.
